Ecological site AX001X04X411
Mesic Udic Moist Forest

Last updated: 1/23/2025
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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 001X–Northern Pacific Coast Range, Foothills, and Valleys

This long and narrow resource area stretches along the Pacific Border Province of the Pacific Mountain System in Oregon and Washington. The area is bounded by the Olympic Mountains on the north and the Klamath Mountains on the south. Most of the area consists of hills and low mountains with gentle to steep slopes. The parent materials are composed primarily of young Tertiary sedimentary rocks with some minor volcanic rocks. Glacial till and outwash deposits are found in the northern half of the area within Washington. In the far southern portion of the area, near the Klamath Mountains, the sedimentary rocks are older and some have been metamorphosed. The average annual precipitation ranges from 60 to 200 inches, increasing with elevation. The dominant soil orders in this MLRA are Andisols, Inceptisols, and Ultisols. Soil depth ranges from shallow to very deep. While most soils in the area are well drained and occur on foothills, mountain slopes and ridges, floodplain and depressional soils can range from well drained to very poorly drained. Soil textures are typically medial, loamy, or clayey. The dominant soils in the area have a mesic or frigid soil temperature regime and a udic soil moisture regime; however, soils with an aquic soil moisture regime or cryic soil temperature regime do occur.

LRU notes

The Southern Pacific Coast Range land resource unit (LRU 4) of MLRA 1 is located in central to southern Oregon State. The LRU extends from the Siletz River to the Rogue River and is bounded on the west by MLRA 4a Sitka Spruce Belt and MLRA 2 Willamette and Puget Sound Valleys to the east. Several major rivers carved valleys through the landscape depositing more recent alluvium. These include the Alsea, Coos, Coquille, Green, Yachats, Siletz, Siuslaw, Umpqua, and Rogue Rivers.

Ecological site concept

This ecological site is found on the western Coast Range in the Pacific Northwest from central to southern Oregon. It is located on footslopes, toeslopes, and backslopes. Elevations are typically between 50 and 4,000 feet with slopes ranging from 0 to 75 percent. The most common overstory species are western hemlock (Tsuga heterophylla), Douglas-fir (Pseudotsuga menziesii), and western redcedar (Thuja plicata). Red alder (Alnus rubra) may be common where there are forest openings. Regeneration of red alder is limited by canopy cover and is commonly in gaps where sunlight is most available. Common understory species include salal (Gaultheria shallon), vine maple (Acer circinatum), salmonberry (Rubus spectabilis), Cascade oregongrape (Mahonia nervosa), western swordfern (Polystichum munitum), and Oregon oxalis (Oxalis oregana). The most common natural disturbance is from windthrow of overstory trees, which results in patchy, small pockets of open areas. The shallow rooting zone causes roots to grow laterally, resulting in more frequent tip-ups in these saturated areas. This in turn creates more canopy openings which allow more sunlight to reach the forest floor, leading to a shrubby understory. Frequent tip-ups also cause these sites to have a hummocky surface with an abundance of down woody debris. In addition, western hemlock is highly susceptible to rot diseases from fungi such as; Armillaria ostoyae, Heterobasidion annosum, Phellinus weirii, and Echinodontium tinctorium which may exacerbate the extent and area of disturbance. The resulting openings in the canopy allow sunlight to reach the forest floor, benefiting the understory. Disturbance by fire is infrequent as a result of the high humidity and precipitation within the western hemlock zone; however, the site has a fire regime between 150-400 years and may experience stand replacing catastrophic wildfires (US Department of Agriculture, 2012).

Associated sites

AX001X04X410	**Mesic Udic Forest** Mesic Udic Forest is located within the same elevation range as Mesic Udic Moist Forest. Mesic Udic Moist Forest is found on depressions or concave landscape positions that retain moisture for longer periods of time.

Table 1. Dominant plant species

Tree	(1) *Tsuga heterophylla* (2) *Pseudotsuga menziesii*
Shrub	(1) *Gaultheria shallon* (2) *Mahonia nervosa*
Herbaceous	(1) *Polystichum munitum* (2) *Oxalis oregana*

Legacy ID

F001XD411OR

Physiographic features

This ecological site is located on footslopes, toeslopes, and backslopes. Elevations are typically between 50 and 4,000 feet with slopes ranging from 0 to 75 percent.

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain slope
Flooding frequency	None
Ponding frequency	None
Elevation	20 – 1,220 m
Slope	0 – 80 %
Water table depth	50 – 150 cm
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

The climate has hot, moist summers and warm, wet winters. Mean annual precipitation ranges from 60 to 130 inches. Average annual temperatures range from 45 to 54 degrees F. The mild temperatures, abundant precipitation, and a long growing season result in highly productive forestlands.

Table 3 Representative climatic features

Frost-free period (characteristic range)	110-200 days
Freeze-free period (characteristic range)	270-340 days
Precipitation total (characteristic range)	1,520-3,300 mm

Climate stations used

- (1) POWERS [USC00356820], Powers, OR
- (2) ELKTON 3 SW [USC00352633], Elkton, OR
- (3) ALSEA FH (FALL CREEK) [USC00350145], Alsea, OR

Influencing water features

In general, this ecological site is not influenced by wetland or riparian water features but may be found on stream terraces or adjacent to wetland and riparian areas. The soils have a high water table from March through June.

Soil features

Soils that support this ecological site occur in the mesic soil temperature regime and the udic soil moisture regime. The soil is usually moist during the growing season.

Table 4. Representative soil features

Parent material	(1) Colluvium – igneous and sedimentary rock (2) Residuum – igneous and sedimentary rock
Surface texture	(1) Silt loam (2) Silty clay loam (3) Loam (4) Gravelly loam (5) Very gravelly loam
Drainage class	Moderately well drained to well drained
Depth to restrictive layer	50 – 150 cm
Surface fragment cover <=3"	0 – 20 %
Surface fragment cover >3"	Not specified
Clay content (2.5-17.8cm)	20 – 30 %

Subsurface fragment volume <=3" (2.5-152.4cm)	0 – 50 %
Subsurface fragment volume >3" (2.5-152.4cm)	0 – 30 %

Ecological dynamics

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 8. Community 1.4 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 9. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 10. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 11. Community 2.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Inventory data references

Other Established Classifications for Ecological Site National Vegetation Classification: A3377 Tsuga heterophylla – Pseudotsuga menziesii / Rubus spectabilis Mesic Forest Alliance USDA Forest Service Plant Associations of Southwestern Oregon: western hemlock / salal / western swordfern USDA Forest Service Plant Association and Management Guide of the Northern Oregon Coast Range: western hemlock/dwarf Oregon grape/swordfern -Northwest Oregon Coast

Other references

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Contributors

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Approval

Kirt Walstad, 1/23/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	12/20/2021
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
